SEQUENCE LISTING

<110> Vanderbilt University

<120> Cell-Permeable SOCS Proteins that
   Inhibit Cytokine-Induced Signaling

<130> 22000.0129P1

<150> 60/550,037
<151> 2004-03-04

<160> 29

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 1
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1   5   10   15
Arg Gly Ser

<210> 2
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 2
Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro
 1   5   10

<210> 3
<211> 212
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 3
Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala
 1   5   10   15
Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser
             20   25   30

```
Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala
        35              40              45
Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp
    50              55              60
Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe
65              70              75              80
Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala
                85              90              95
Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys
            100             105             110
Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg
        115             120             125
Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr
    130             135             140
Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg
145             150             155             160
Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln
            165             170             175
Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu
        180             185             190
Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe
        195             200             205
Pro Phe Gln Ile
    210
```

```
<210> 4
<211> 225
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 4
```

```
Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu
1               5               10              15
Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln
            20              25              30
Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp
        35              40              45
Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro
    50              55              60
Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe
65              70              75              80
Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln
                85              90              95
Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln
            100             105             110
Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met
        115             120             125
Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser
    130             135             140
Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr
145             150             155             160
Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu
            165             170             175
Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu
        180             185             190
Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr
        195             200             205
```

```
Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro
    210                 215                 220
Leu
225


<210> 5
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct


<400> 5
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1               5                  10                  15
Arg Gly Ser Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile
            20                  25                  30
Ser Pro Ala Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser
        35                  40                  45
Ser Ser Ser Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala
    50                  55                  60
Val Pro Ala Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser
65                  70                  75                  80
His Ser Asp Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala
                85                  90                  95
Cys Gly Phe Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg
            100                 105                 110
Leu Arg Ala Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln
    115                 120                 125
Arg Asn Cys Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr
    130                 135                 140
Ser Ile Arg Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser
145                 150                 155                 160
Arg Glu Thr Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala
            165                 170                 175
Ala Pro Arg Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg
            180                 185                 190
Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg
        195                 200                 205
Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu
    210                 215                 220
Ser Ser Phe Pro Phe Gln Ile Ala Ala Val Leu Leu Pro Val Leu Leu
225                 230                 235                 240
Ala Ala Pro


<210> 6
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 6
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1               5                  10                  15
```

```
Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
            20                  25                  30
Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala Ala
            35                  40                  45
Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser Ser
    50                  55                  60
Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala Pro
65                  70                  75                  80
Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp Tyr
                85                  90                  95
Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe Tyr
            100                 105                 110
Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala Glu
            115                 120                 125
Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys Phe
    130                 135                 140
Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg Val
145                 150                 155                 160
His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr Phe
                165                 170                 175
Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg Arg
                180                 185                 190
Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln Glu
            195                 200                 205
Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu Ala
    210                 215                 220
Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe Pro
225                 230                 235                 240
Phe Gln Ile


<210> 7
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 7
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1               5                   10                  15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
            20                  25                  30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
            35                  40                  45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
    50                  55                  60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
65                  70                  75                  80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
                85                  90                  95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
                100                 105                 110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
            115                 120                 125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
    130                 135                 140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
145                 150                 155                 160
```

```
Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
                165                 170                 175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
            180                 185                 190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
        195                 200                 205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
    210                 215                 220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225                 230                 235                 240
Asp Ala Pro Leu
```

<210> 8
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 8
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Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1               5                   10                  15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
            20                  25                  30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
        35                  40                  45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
    50                  55                  60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
65                  70                  75                  80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
                85                  90                  95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
            100                 105                 110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
        115                 120                 125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
    130                 135                 140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
145                 150                 155                 160
Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
                165                 170                 175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
            180                 185                 190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
        195                 200                 205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
    210                 215                 220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225                 230                 235                 240
Asp Ala Pro Leu Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro
                245                 250                 255
```

<210> 9
<211> 256
<212> PRT
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 9
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1               5                  10                  15
Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
            20                  25                  30
Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu Asp
            35                  40                  45
Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln Leu
        50                  55                  60
Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp Ser
65                  70                  75                  80
Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro Ala
                85                  90                  95
Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe Thr
            100                 105                 110
Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln Cys
        115                 120                 125
Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln Pro
    130                 135                 140
Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met Pro
145                 150                 155                 160
Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser Ser
            165                 170                 175
Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr Pro
            180                 185                 190
Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu Val
        195                 200                 205
Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu Cys
    210                 215                 220
Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr Gln
225                 230                 235                 240
Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro Leu
            245                 250                 255

<210> 10
<211> 1121
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 10
gcgatctgtg ggtgacagtg tctgcgagag actttgccac accattctgc cggaatttgg      60
agaaaaagaa ccagccgctt ccagtcccct ccccctccgc caccatttcg dacaccctgc     120
acactctcgt tttggggtac cctgtgactt ccaggcagca cgcgaggtcc actggcccca     180
gctcgggcga ccagctgtct gggacgtgtt gactcatctc ccatgaccct gcggtgcctg     240
gagccctccg ggaatggagc ggacaggacg cggagccagt gggggaccgc ggggttgccg     300
gaggaacagt cccccgaggc ggcgcgtctg gcgaaagccc tgcgcgagct cagtcaaaca     360
ggatggtact ggggaagtat gactgttaat gaagccaaag agaaattaaa agaggctcca     420
gaaggaactt tcttgattag agatagttcg cattcagact acctactaac tatatccgtt     480
aagacgtcag ctggaccgac taacctgcgg attgagtacc aagatgggaa attcagattg     540
gattctatca tatgtgtcaa gtccaagctt aaacagtttg acagtgtggt tcatctgatt     600
gactactatg tccagatgtg caaggataaa cggacaggcc agaagccccc acggaatggg     660
actgttcacc tgtacctgac caaacctctg tatacatcag cacccactct gcagcatttc     720
tgtcgactcg ccattaacaa atgtaccggt acgatctggg gactgccttt accaacaaga     780
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```
ctaaaagatt acttggaaga atataaattc caggtataag tatttctctc tcttttttcgt      840
ttttttttaa aaaaaaaaaa acacatgcct catatagact atctccgaat gcagctatgt      900
gaaagagaac ccagaggccc tcctctggat aactgcgcag aattctctct taaggacagt      960
tgggctcagt ctaacttaaa ggtgtgaaga tgtagctagg tattttaaag ttccccttag     1020
gtagtttttag ctgaatgatg ctttcttttcc tatggctgct caagatcaaa tggcccttttt     1080
aaatgaaaca aaacaaaaca aaacaaaaaa aaaaaaaaa a                          1121
```

```
<210> 11
<211> 2746
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 11
ggctccgact tggactccct gctccgctgc tgccgcttcg gccccgcacg cagccagccg       60
ccagccgccc gcccggccca gctcccgccg cggcccccttg ccgcggtccc tctcctggtc      120
ccctccccggt tggtccgggg gtgcgcaggg ggcagggcgg gcgcccaggg gaagctcgag      180
ggacgcgcgc gcgaaggctc ctttgtggac ttcacggccg ccaacatctg ggcgcagcgc      240
gggccaccgc tggccgtctc gccgccgcgt cgccttgggg acccgagggg gctcagcccc      300
aaggacggag acttcgattc gggaccagcc ccccgggatg cggtagcggc cgctgtgcgg      360
aggccgcgaa gcagctgcag ccgccgccgc gcagatccac gctggctccg tgcgccatgg      420
tcacccacag caagtttccc gccgccggga tgagccgccc cctggacacc agcctgcgcc      480
tcaagacctt cagctccaag agcgagtacc agctggtggt gaacgcagtg cgcaagctgc      540
aggagagcgg cttctactgg agcgcagtga ccggcggcga ggcgaacctg ctgctcagtg      600
ccgagcccgc cggcaccttt ctgatccgcg acagctcgga ccagcgccac ttcttcacgc      660
tcagcgtcaa gacccagtct gggaccaaga acctgcgcat ccagtgtgag ggggggcagct      720
tctctctgca gagcgatccc cggagcacgc agcccgtgcc ccgcttcgac tgcgtgctca      780
agctggtgca ccactacatg ccgcccccctg gagcccccctc cttcccctcg ccacctactg      840
aaccctcctc cgaggtgccc gagcagccgt ctgcccagcc actccctggg agtcccccca      900
gaagagccta ttacatctac tccggggggcg agaagatccc cctggtgttg agccggcccc      960
tctcctccaa cgtggccact cttcagcatc tctgtcggaa gaccgtcaac ggccacctgg     1020
actcctatga gaaagtcacc cagctgccgg ggcccattcg ggagttcctg gaccagtacg     1080
atgccccgct ttaaggggta aagggcgcaa agggcatggg tcgggagagg ggacgcaggc     1140
ccctctcctc cgtggcacat ggcacaagca caagaagcca accaggagag agtcctgtag     1200
ctctgggggg aaagagggcg gacaggcccc tccctctgcc ctctccctgc agaatgtggc     1260
aggcggacct ggaatgtgtt ggagggaagg gggagtacca cctgagtctc cagcttctcc     1320
ggaggagcca gctgtcctgg tgggacgata gcaaccacaa gtggattctc cttcaattcc     1380
tcagcttccc ctctgcctcc aaacagggga cacttcggga atgctgaact aatgagaact     1440
gccagggaat cttcaaactt tccaacggaa cttgtttgct ctttgatttg gtttaaacct     1500
gagctggttg tggagcctgg gaaaggtgga agagagagag gtcctgaggg ccccagggct     1560
gcgggctggc gaaggaaatg gtcacacccc ccgcccaccc caggcgagga tcctggtgac     1620
atgctcctct ccctggctcc ggggagaagg gcttggggtg acctgaaggg aaccatcctg     1680
gtaccccaca tcctctcctc cgggacagtc accgaaaaca caggttccaa agtctacctg     1740
gtgcctgaga gcccagggcc cttcctccgt tttaggggg aagcaacatt tggaggggat     1800
ggatgggctg gtcagctggt ctcctttttcc tactcatact ataccttcct gtacctgggt     1860
ggatggagcg ggaggatgga ggagacggga catctttcac ctcaggctcc tggtagagaa     1920
gacaggggat tctactctgt gcctcctgac tatgtctggc taagagattc gccttaaatg     1980
ctccctgtcc catggagagg gacccagcat aggaaagcca catactcagc ctggatgggt     2040
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ggggggggcgg aaacccatgc ctcccagctg agcactggga atgtcagccc agtaagtatt     2160
ggccagtcag gcgcctcgtg gtcagagcag agccaccagg tcccactgcc ccgagccctg     2220
cacagccctc cctcctgcct gggtggggga ggctggaggt cattggagag gctggactgc     2280
tgccaccccg ggtgctcccg ctctgccata gcactgatca gtgacaattt acaggaatgt     2340
agcagcgatg gaattacctg gaacagtttt ttgtttttgt ttttgttttt gttttttgtgg     2400
gggggggcaa ctaaacaaac acaaagtatt ctgtgtcagg tattgggctg gacagggcag     2460
ttgtgtgttg gggtggtttt tttctctatt tttttgtttg tttcttgttt tttaataatg     2520
tttacaatct gcctcaatca ctctgtctttt tataaagatt ccacctccag tcctctctcc     2580
tccccccctac tcaggccctt gaggctatta ggagatgctt gaagaactca acaaaatccc     2640
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```
aatccaagtc aaactttgca catatttata tttatattca gaaaagaaac atttcagtaa      2700
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```

```
<210> 12
<211> 198
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 12
Met Thr Leu Arg Cys Leu Glu Pro Ser Gly Asn Gly Ala Asp Arg Thr
  1               5                  10                  15
Arg Ser Gln Trp Gly Thr Ala Gly Leu Pro Glu Glu Gln Ser Pro Glu
               20                  25                  30
Ala Ala Arg Leu Ala Lys Ala Leu Arg Glu Leu Ser Gln Thr Gly Trp
           35                  40                  45
Tyr Trp Gly Ser Met Thr Val Asn Glu Ala Lys Glu Lys Leu Lys Glu
     50                  55                  60
Ala Pro Glu Gly Thr Phe Leu Ile Arg Asp Ser Ser His Ser Asp Tyr
65                  70                  75                  80
Leu Leu Thr Ile Ser Val Lys Thr Ser Ala Gly Pro Thr Asn Leu Arg
               85                  90                  95
Ile Glu Tyr Gln Asp Gly Lys Phe Arg Leu Asp Ser Ile Ile Cys Val
               100                 105                 110
Lys Ser Lys Leu Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr
           115                 120                 125
Tyr Val Gln Met Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg
     130                 135                 140
Asn Gly Thr Val His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala
145                 150                 155                 160
Pro Thr Leu Gln His Phe Cys Arg Leu Ala Ile Asn Lys Cys Thr Gly
               165                 170                 175
Thr Ile Trp Gly Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu Glu
               180                 185                 190
Glu Tyr Lys Phe Gln Val
           195

<210> 13
<211> 2545
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 13
ctcgcctgct cttacgaccg ctgtctctcc gggctcccgg acgcccccctt cccggcccag      60
ctctccgtcg aggtccctcg cccaggtcct ttgcctgatt cgcccaggag tgcgcctcat     120
cggcccgggg agcagcgaag ccagaggggg cgcacgcacg gggagcccct ttgtagactt     180
cacggctgcc aacatctggg cgcagcgcga gccactgctg ccgccgcct cgcctcgggg      240
accataggag gcgcagcccc aaggccggag atttcgcttc gggactagct ccccgggatg     300
cggtagcggc cgctgtgcgg aggccgcgaa gcagctgcag ccaccgccgc gcagatccac     360
gctggctccg tgcgccatgg tcacccacag caagtttccc gccgccggga tgagccgccc     420
cctggacacc agcctgcgcc tcaagacctt cagctccaaa agcgagtacc agctggtggt     480
gaacgccgtg cgcaagctgc aggagagcgg attctactgg agcgccgtga ccggcggcga     540
ggcgaacctg ctgctcagcg ccgagcccgc gggcaccttt cttatccgcg acagctcgga     600
ccagcgccac ttcttcacgt tgagcgtcaa gacccagtcg gggaccaaga acctacgcat     660
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8

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ccagtgtgag ggggggcagct tttcgctgca gagtgacccc cgaagcacgc agccagttcc    720
ccgcttcgac tgtgtactca agctggtgca ccactacatg ccgcctccag ggaccccctc    780
ctttctttg ccacccacgg aaccctcgtc cgaagttccg gagcagccac ctgcccaggc    840
actccccggg agtaccccca agagagctta ctacatctat tctgggggcg agaagattcc    900
gctggtactg agccgacctc tctcctccaa cgtggccacc ctccagcatc tttgtcggaa    960
gactgtcaac ggccacctgg actcctatga gaaagtgacc cagctgcctg gacccattcg    1020
ggagttcctg gatcagtatg atgctccact ttaaggagca aaagggtcag aggggggcct    1080
gggtcggtcg gtcgcctctc ctccgaggca catggcacaa gcacaaaaat ccagccccaa    1140
cggtcggtag ctcccagtga gccaggggca gattggcttc ttcctcaggc cctccactcc    1200
cgcagagtag agctggcagg acctggaatt cgtctgaggg gaggggggagc tgccacctgc    1260
tttcccccct cccccagctc cagcttcttt caagtggagc cagccggcct ggcctggtgg    1320
gacaatacct ttgacaagcg gactctcccc tcccttcct ccacacccc tctgcttccc     1380
aagggaggtg gggacacctc caagtgttga acttagaact gcaaggggaa tcttcaaact    1440
ttcccgctgg aacttgtttg cgctttgatt tggtttgatc aagagcaggc acctggggga    1500
aggatggaag agaaaagggt gtgtgaaggg tttttatgct ggccaaagaa ataaccactc    1560
ccactgccca acctaggtga ggagtggtgg ctcctggctc tggggagagt ggcaaggggt    1620
gacctgaaga gagctatact ggtgccaggc tcctctccat ggggcagcta atgaaacctc    1680
gcagatccct tgcaccccag aaccctcccc gttgtgaaga ggcagtagca tttagaaggg    1740
agacagatga ggctggtgag ctggccgcct tttccaacac cgaagggagg cagatcaaca    1800
gatgagccat cttggagccc aggtttccct ggagcagatg gagggttctg cttgtctct    1860
cctatgtggg gctaggagac tcgccttaaa tgccctctgt cccagggatg gggattggca    1920
cacaaggagc caaacacagc caataggcag agagttgagg gattcacccca ggtggctaca    1980
ggccagggga agtggctgca ggggagagac ccagtcactc aggagactcc tgagttaaca    2040
ctgggaagac attggccagt cctagtcatc tctcggtcag taggtccgag agcctccagg    2100
ccctgcacag ccctcccttc tcacctgggg ggaggcagga ggtgatggag aagccttccc    2160
atgccgctca caggggcctc acgggaatgc agcagccatg caattacctg gaactggtcc    2220
tgtgttgggg agaaacaagt tttctgaagt caggtatggg gctgggtggg gcagctgtgt    2280
gttggggtgg ctttttttctc tctgttttga ataatgttta caattttgcct caatcacttt    2340
tataaaaatc cacctccagc ccgcccctct ccccactcag gccttcgagg ctgtctgaag    2400
atgcttgaaa aactcaacca aatcccagtt caactcagac tttgcacata tatttatatt    2460
tatactcaga aaagaaacat ttcagtaatt tataataaaa gagcactatt ttttaatgaa    2520
aaaaaaaaaa aaaaaaaaaa aaaaa                                          2545
```

```
<210> 14
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 14
ccgcatatgg tcacccacag caagtttccc gcc                                   33

<210> 15
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 15
ccgcatatgt taaagtggag catcatactg atc                                   33

<210> 16
<211> 68
<212> DNA
<213> Artificial Sequence
```

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```
<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 16
cgcatatgtc agggtgcggc aagaagaaca gggagaagaa cggctgcaag tggagcatca    60
tactgatc                                                             68


<210> 17
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 17
ccgcatatgg cagccgttct tctccctgtt cttcttgccg cacccgtcac ccacagcaag    60
tttcccgcc                                                            69


<210> 18
<211> 1216
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 18
ggcagctgca cggctcctgg ccccggagca tgcgcgagag ccgccccgga gcgccccgga      60
gccccccgcc gtcccgcccg cggcgtcccg cgccccgccg ccagcgcacc cccggacgct     120
atggcccacc cctccggctg gcccctcctg taggatggta gcacacaacc aggtggcagc     180
cgacaatgca gtctccacag cagcagagcc ccgacggcgg ccagaacctt cctcctcttc     240
ctcctcctcg cccgcggccc ccgcgcgccc gcggccgtgc cccgcggtcc cggccccggc     300
ccccggcgac acgcacttcc gcacattccg ttcgcacgcc gattaccggc gcatcacgcg     360
cgccagcgcg ctcctggacg cctgcggatt ctactggggg ccctgagcg tgcacggggc      420
gcacgagcgg ctgcgcgccg agcccgtggg caccttcctg gtgcgcgaca gccgccagcg     480
gaactgcttt ttcgcccta gcgtgaagat ggcctcggga cccacgagca tccgcgtgca      540
cttttcaggcc ggccgctttc acctggatgg cagccgcgag agcttcgact gcctcttcga     600
gctgctggag cactacgtgg cggcgccgcg ccgcatgctg ggggcccccgc tgcgccagcg     660
ccgcgtgcgg ccgctgcagg agctgtgccg ccagcgcatc gtggccaccg tgggccgcga     720
gaacctggct cgcatccccc tcaacccccgt cctccgcgac tacctgagct ccttccccctt    780
ccagatttga ccggcagcgc ccgccgtgca cgcagcatta actgggatgc cgtgttattt      840
tgttattact tgcctggaac catgtgggta ccctccccgg cctgggttgg agggagcgga      900
tgggtgtagg ggcgaggcgc ctcccgccct cggctggaga cgaggccgca gaccccttct      960
cacctcttga gggggtcctc cccctcctgg tgctccctct gggtccccct ggttgttgta     1020
gcagcttaac tgtatctgga gccaggacct gaactcgcac ctcctacctc ttcatgttta     1080
catatatccca gtatctttgc acaaaccagg ggttgggggga gggtctctgg ctttattttt    1140
ctgctgtgca gaatcctatt ttatatttttt taaagtcagt ttaggtaata aactttatta    1200
tgaaagtttt tttttt                                                     1216


<210> 19
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
```

synthetic construct

<400> 19

Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser	Ser	Gly	Leu	Val	Pro
1				5					10					15	
Arg	Gly	Ser	Met	Val	Thr	His	Ser	Lys	Phe	Pro	Ala	Ala	Gly	Met	Ser
			20					25					30		
Arg	Pro	Leu	Asp	Thr	Ser	Leu	Arg	Leu	Lys	Thr	Phe	Ser	Ser	Lys	Ser
			35				40					45			
Glu	Tyr	Gln	Leu	Val	Val	Asn	Ala	Val	Arg	Lys	Leu	Gln	Glu	Ser	Gly
		50				55					60				
Phe	Tyr	Trp	Ser	Ala	Val	Thr	Gly	Gly	Glu	Ala	Asn	Leu	Leu	Leu	Ser
65				70					75						80
Ala	Glu	Pro	Ala	Gly	Thr	Phe	Leu	Ile	Arg	Asp	Ser	Ser	Asp	Gln	Arg
				85					90					95	
His	Phe	Phe	Thr	Leu	Ser	Val	Lys	Thr	Gln	Ser	Gly	Thr	Lys	Asn	Leu
			100					105					110		
Arg	Ile	Gln	Cys	Glu	Gly	Gly	Ser	Phe	Ser	Leu	Gln	Ser	Asp	Pro	Arg
			115				120					125			
Ser	Thr	Gln	Pro	Val	Pro	Arg	Phe	Asp	Cys	Val	Leu	Lys	Leu	Val	His
		130				135					140				
His	Tyr	Met	Pro	Pro	Pro	Gly	Thr	Pro	Ser	Phe	Ser	Leu	Pro	Pro	Thr
145					150					155					160
Glu	Pro	Ser	Ser	Glu	Val	Pro	Glu	Gln	Pro	Pro	Ala	Gln	Ala	Leu	Pro
				165					170					175	
Gly	Ser	Thr	Pro	Lys	Arg	Ala	Tyr	Tyr	Ile	Tyr	Ser	Gly	Gly	Glu	Lys
			180					185					190		
Ile	Pro	Leu	Val	Leu	Ser	Arg	Pro	Leu	Ser	Ser	Asn	Val	Ala	Thr	Leu
			195				200					205			
Gln	His	Leu	Cys	Arg	Lys	Thr	Val	Asn	Gly	His	Leu	Asp	Ser	Tyr	Glu
		210				215					220				
Lys	Val	Thr	Gln	Leu	Pro	Gly	Pro	Ile	Arg	Glu	Phe	Leu	Asp	Gln	Tyr
225					230					235					240
Asp	Ala	Pro	Leu	Ala	Ala	Val	Leu	Leu	Pro	Val	Leu	Leu	Ala	Ala	Pro
				245					250					255	

<210> 20
<211> 198
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 20

Met	Thr	Leu	Arg	Cys	Leu	Glu	Pro	Ser	Gly	Asn	Gly	Gly	Glu	Gly	Thr
1				5					10					15	
Arg	Ser	Gln	Trp	Gly	Thr	Ala	Gly	Ser	Ala	Glu	Glu	Pro	Ser	Pro	Gln
			20					25					30		
Ala	Ala	Arg	Leu	Ala	Lys	Ala	Leu	Arg	Glu	Leu	Gly	Gln	Thr	Gly	Trp
			35				40					45			
Tyr	Trp	Gly	Ser	Met	Thr	Val	Asn	Glu	Ala	Lys	Glu	Lys	Leu	Lys	Glu
		50				55					60				
Ala	Pro	Glu	Gly	Thr	Phe	Leu	Ile	Arg	Asp	Ser	Ser	His	Ser	Asp	Tyr
65					70					75					80
Leu	Leu	Thr	Ile	Ser	Val	Lys	Thr	Ser	Ala	Gly	Pro	Thr	Asn	Leu	Arg
				85					90					95	
Ile	Glu	Tyr	Gln	Asp	Gly	Lys	Phe	Arg	Leu	Asp	Ser	Ile	Ile	Cys	Val
			100					105					110		

```
Lys Ser Lys Leu Lys Gln Phe Asp Ser Val Val His Leu Ile Asp Tyr
        115             120             125
Tyr Val Gln Met Cys Lys Asp Lys Arg Thr Gly Pro Glu Ala Pro Arg
    130             135             140
Asn Gly Thr Val His Leu Tyr Leu Thr Lys Pro Leu Tyr Thr Ser Ala
145             150             155             160
Pro Ser Leu Gln His Leu Cys Arg Leu Thr Ile Asn Lys Cys Thr Gly
                165             170             175
Ala Ile Trp Gly Leu Pro Leu Pro Thr Arg Leu Lys Asp Tyr Leu Glu
            180             185             190
Glu Tyr Lys Phe Gln Val
        195
```

```
<210> 21
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 21
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
1           5               10              15
Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
            20              25              30
Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu Asp
        35              40              45
Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln Leu
    50              55              60
Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp Ser
65              70              75              80
Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro Ala
            85              90              95
Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe Thr
            100             105             110
Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln Cys
        115             120             125
Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln Pro
    130             135             140
Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met Pro
145             150             155             160
Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser Ser
                165             170             175
Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr Pro
            180             185             190
Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu Val
        195             200             205
Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu Cys
    210             215             220
Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr Gln
225             230             235             240
Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro Leu
            245             250             255
```

```
<210> 22
<211> 244
<212> PRT
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 22
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1   5   10   15
Arg Gly Ser Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser
            20   25   30
Arg Pro Leu Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser
        35   40   45
Glu Tyr Gln Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly
    50   55   60
Phe Tyr Trp Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser
65   70   75   80
Ala Glu Pro Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg
                85   90   95
His Phe Phe Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu
            100   105   110
Arg Ile Gln Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg
        115   120   125
Ser Thr Gln Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His
    130   135   140
His Tyr Met Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr
145   150   155   160
Glu Pro Ser Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro
                165   170   175
Gly Ser Thr Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys
            180   185   190
Ile Pro Leu Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu
        195   200   205
Gln His Leu Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu
    210   215   220
Lys Val Thr Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr
225   230   235   240
Asp Ala Pro Leu

<210> 23
<211> 2210
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 23
agccgcggcc tcaactaaaa gtggccattg acctttcaag ctttcgagca gtgatgcaat   60
agaatagtat ttcaaagaaa aatgcttatc gaaattttgg atccggtttt cccgtgattg   120
ttaagggttt ctttaaaaa gtaggtcaca tttcaagtag gtcatatttc ggggggcgggt   180
gcgcagacaa ggagatgagt ttccactaag gccagggggc ctccaacggg gttggaggtg   240
agaatcccag gtagggtaga ggtgccgaga tccttccgaa tcccagccct ggggcgtcag   300
ccctgcaggg aatggcagag acactctccg gactgaggga accgaggcca gtcaccaagc   360
cccttccggg cgcgcaggcg atcagtgggt gaccgcggct gcgagggact ttgtcatccg   420
tcctccagga tctggggaga aagagcccca tcccttctct ctctgccacc atttcggaca   480
ccccgcaggg actcgttttg ggattcgcac tgacttcaag gaaggacgcg aacccttctc   540
tgaccccagc tcgggcggcc acctgtcttt gccgcggtga cccttctctc atgaccctgc   600
ggtgccttga gccctccggg aatggcgggg aagggacgcg agccagtgg gggaccgcgg   660
ggtcggcgga ggagccatcc ccgcaggcgg cgcgtctggc gaaggccctg cgggagctcg   720
gtcagacagg atggtactgg ggaagtatga ctgttaatga agccaaagag aaattaaaag   780

```
aggcaccaga aggaactttc ttgattagag atagctcgca ttcagactac ctactaacaa    840
tatctgttaa aacatcagct ggaccaacta atcttcgaat cgaataccaa gacggaaaat    900
tcagattgga ctctatcata tgtgtcaaat ccaagcttaa acaatttgac agtgtggttc    960
atctgatcga ctactatgtt cagatgtgca aggataagcg gacaggtcca gaagcccccc   1020
ggaacggcac tgttcacctt tatctgacca aaccgctcta cacgtcagca ccatctctgc   1080
agcatctctg taggctcacc attaacaaat gtaccggtgc catctgggga ctgcctttac   1140
caacaagact aaaagattac ttggaagaat ataaattcca ggtataaatg tttctctttt   1200
tttaaacatg tctcacatag agtatctccg aatgcagcta tgtaaaagag aaccaaaact   1260
tgagtgctct ggataactat atggaatgct ttctaagaac agctgaagct aatctaattt   1320
aaatttaaca gcttgaagag gtagctaggt gtttaaagtt cctccagata cttttacctg   1380
agtgatgctt cccttcctaa ggctgaccaa gacctgttga tccttttaga ttaaaaataa   1440
aatgtcgcat gtaaaggctg aagtcgcgtt ttatcagaat gccttgcctt cttaggttct   1500
tttccattat gtcaaaggtc caggctccag taggagagaa agaactcctc ataggaatac   1560
tgaagaagtg ggaaggaacc aagctgacac aggcctcact gcaatttgat atgcctgctg   1620
atcagagtct cttgggcatt ttatattttg cattctgatg tacctaggag ttttgttaaa   1680
cagatgatgt atgtgagtat ttatcccatt ttatgcaatt aaccaaatca accaaaaaaa   1740
gtgaccatga agtcctgtat ttgtcttttt actacatgta ggaactctca tgtgaatgag   1800
tactgtagta atccattcta tgggagcctt atttcagaaa tatttcaaac tggtgcaaat   1860
ggaaaagact ttctcttttc ctttaaagct aaagacaaga atatcatgct atacaggtgc   1920
aactcaatcc ccgttaataa aaaccaatgt aggtataggc attctaccct ttgaaatagc   1980
tgtgtcccaa cctgttgcca ttgatttttt ggaaatggct ttagaaatat ccaagttgtc   2040
cttgaattgt ctaaccatgg acataaacag ttgtctccct tctactgtgt agaatacttt   2100
gacttaattt tcttccagat acaggggggat acctgcctgt ttttcaaagt gtttatttac   2160
tgctgttact atttgattag aatgtattaa ataaaaaaaa cctgatttct              2210
```

```
<210> 24
<211> 225
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 24
Met Val Thr His Ser Lys Phe Pro Ala Ala Gly Met Ser Arg Pro Leu
  1               5                  10                  15
Asp Thr Ser Leu Arg Leu Lys Thr Phe Ser Ser Lys Ser Glu Tyr Gln
             20                  25                  30
Leu Val Val Asn Ala Val Arg Lys Leu Gln Glu Ser Gly Phe Tyr Trp
         35                  40                  45
Ser Ala Val Thr Gly Gly Glu Ala Asn Leu Leu Leu Ser Ala Glu Pro
     50                  55                  60
Ala Gly Thr Phe Leu Ile Arg Asp Ser Ser Asp Gln Arg His Phe Phe
 65                  70                  75                  80
Thr Leu Ser Val Lys Thr Gln Ser Gly Thr Lys Asn Leu Arg Ile Gln
                 85                  90                  95
Cys Glu Gly Gly Ser Phe Ser Leu Gln Ser Asp Pro Arg Ser Thr Gln
            100                 105                 110
Pro Val Pro Arg Phe Asp Cys Val Leu Lys Leu Val His His Tyr Met
        115                 120                 125
Pro Pro Pro Gly Thr Pro Ser Phe Ser Leu Pro Pro Thr Glu Pro Ser
    130                 135                 140
Ser Glu Val Pro Glu Gln Pro Pro Ala Gln Ala Leu Pro Gly Ser Thr
145                 150                 155                 160
Pro Lys Arg Ala Tyr Tyr Ile Tyr Ser Gly Gly Glu Lys Ile Pro Leu
                165                 170                 175
Val Leu Ser Arg Pro Leu Ser Ser Asn Val Ala Thr Leu Gln His Leu
            180                 185                 190
Cys Arg Lys Thr Val Asn Gly His Leu Asp Ser Tyr Glu Lys Val Thr
        195                 200                 205
```

14

```
Gln Leu Pro Gly Pro Ile Arg Glu Phe Leu Asp Gln Tyr Asp Ala Pro
    210             215             220
Leu
225
```

```
<210> 25
<211> 212
<212> PRT
<213> Artificial Sequence
```

```
<220>
<223> Description of Artificial Sequence; note =
      synthetic construct
```

```
<400> 25
Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala
 1               5               10              15
Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser
            20              25              30
Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala
            35              40              45
Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp
    50              55              60
Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe
65              70              75              80
Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala
            85              90              95
Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys
            100             105             110
Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg
            115             120             125
Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr
    130             135             140
Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg
145             150             155             160
Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln
            165             170             175
Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu
            180             185             190
Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe
            195             200             205
Pro Phe Gln Ile
    210
```

```
<210> 26
<211> 1193
<212> DNA
<213> Artificial Sequence
```

```
<220>
<223> Description of Artificial Sequence; note =
      synthetic construct
```

```
<400> 26
ggcacggctc ccagcccccgg agcatgcgcg acagccgccc cggagccccc agccgcggct      60
ccccgcgtcc tgccgccagc gcagccccgg acgctatggc ccacccctcc agctggcccc     120
tcgagtagga tggtagcacg caaccaggtg gcagccgaca atgcgatctc cccggcagca     180
gagccccgac ggcggtcaga gccctcctcg tcctcgtctt cgtcctcgcc agcggcccccc    240
gtgcgtcccc ggccctgccc ggcggtccca gccccagccc ctggcgacac tcacttccgc     300
accttccgct cccactccga ttaccggcgc atcacgcgga ccagcgcgct cctggacgcc     360
tgcggcttct attggggacc cctgagcgtg cacggggcgc acgagcggct gcgtgccgag     420
```

```
cccgtgggca ccttcttggt gcgcgacagt cgccaacgga actgcttctt cgcgctcagc     480
gtgaagatgg cttcgggccc cacgagcatc cgcgtgcact tccaggccgg ccgcttccac     540
ttggacggca gccgcgagac cttcgactgc cttttcgagc tgctggagca ctacgtggcg     600
gcgccgcgcc gcatgttggg ggccccgctg cgccagcgcc gcgtgcggcc gctgcaggag     660
ctgtgtcgcc agcgcatcgt ggccgccgtg ggtcgcgaga acctggcgcg catccctctt     720
aacccggtac tccgtgacta cctgagttcc ttccccttcc agatctgacc ggctgccgct     780
gtgccgcagc attaagtggg ggcgccttat tatttcttat tattaattat tattattttt     840
ctggaaccac gtgggagccc tccccgcctg ggtcggaggg agtggttgtg gagggtgaga     900
tgcctcccac ttctggctgg agacctcatc ccacctctca ggggtggggg tgctcccctc     960
ctggtgctcc ctccgggtcc ccctggttg tagcagcttg tgtctgggc caggacctga    1020
attccactcc tacctctcca tgtttacata ttcccagtat ctttgcacaa accagggtc    1080
ggggagggtc tctggcttca ttttctgct gtgcagaata tcctatttta tattttaca    1140
gccagtttag gtaataaact ttattatgaa agttttttt taaaagaaac aaa          1193
```

<210> 27
<211> 231
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 27
```
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
 1               5                  10                  15
Arg Gly Ser Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile
            20                  25                  30
Ser Pro Ala Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser
        35                  40                  45
Ser Ser Ser Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala
    50                  55                  60
Val Pro Ala Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser
65                  70                  75                  80
His Ser Asp Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala
                85                  90                  95
Cys Gly Phe Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg
            100                 105                 110
Leu Arg Ala Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln
        115                 120                 125
Arg Asn Cys Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr
    130                 135                 140
Ser Ile Arg Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser
145                 150                 155                 160
Arg Glu Thr Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala
                165                 170                 175
Ala Pro Arg Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg
            180                 185                 190
Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg
        195                 200                 205
Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu
    210                 215                 220
Ser Ser Phe Pro Phe Gln Ile
225                 230
```

<210> 28
<211> 243
<212> PRT
<213> Artificial Sequence

16

```
<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 28
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1               5                   10                  15
Arg Gly Ser Met Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile
            20                  25                  30
Ser Pro Ala Ala Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser
        35                  40                  45
Ser Ser Ser Ser Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala
    50                  55                  60
Val Pro Ala Pro Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser
65                  70                  75                  80
His Ser Asp Tyr Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala
                85                  90                  95
Cys Gly Phe Tyr Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg
            100                 105                 110
Leu Arg Ala Glu Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln
        115                 120                 125
Arg Asn Cys Phe Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr
    130                 135                 140
Ser Ile Arg Val His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser
145                 150                 155                 160
Arg Glu Thr Phe Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala
                165                 170                 175
Ala Pro Arg Arg Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg
            180                 185                 190
Pro Leu Gln Glu Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg
        195                 200                 205
Glu Asn Leu Ala Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu
    210                 215                 220
Ser Ser Phe Pro Phe Gln Ile Ala Ala Val Leu Leu Pro Val Leu Leu
225                 230                 235                 240
Ala Ala Pro


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<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence; note =
      synthetic construct

<400> 29
Met Gly Ser Ser His His His His His His Ser Ser Gly Leu Val Pro
1               5                   10                  15
Arg Gly Ser Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro Met
            20                  25                  30
Val Ala Arg Asn Gln Val Ala Ala Asp Asn Ala Ile Ser Pro Ala Ala
        35                  40                  45
Glu Pro Arg Arg Arg Ser Glu Pro Ser Ser Ser Ser Ser Ser Ser Ser
    50                  55                  60
Pro Ala Ala Pro Val Arg Pro Arg Pro Cys Pro Ala Val Pro Ala Pro
65                  70                  75                  80
Ala Pro Gly Asp Thr His Phe Arg Thr Phe Arg Ser His Ser Asp Tyr
                85                  90                  95
```

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Arg Arg Ile Thr Arg Thr Ser Ala Leu Leu Asp Ala Cys Gly Phe Tyr
            100             105             110
Trp Gly Pro Leu Ser Val His Gly Ala His Glu Arg Leu Arg Ala Glu
            115             120             125
Pro Val Gly Thr Phe Leu Val Arg Asp Ser Arg Gln Arg Asn Cys Phe
            130             135             140
Phe Ala Leu Ser Val Lys Met Ala Ser Gly Pro Thr Ser Ile Arg Val
145             150             155             160
His Phe Gln Ala Gly Arg Phe His Leu Asp Gly Ser Arg Glu Thr Phe
                165             170             175
Asp Cys Leu Phe Glu Leu Leu Glu His Tyr Val Ala Ala Pro Arg Arg
            180             185             190
Met Leu Gly Ala Pro Leu Arg Gln Arg Arg Val Arg Pro Leu Gln Glu
            195             200             205
Leu Cys Arg Gln Arg Ile Val Ala Ala Val Gly Arg Glu Asn Leu Ala
210             215             220
Arg Ile Pro Leu Asn Pro Val Leu Arg Asp Tyr Leu Ser Ser Phe Pro
225             230             235             240
Phe Gln Ile
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